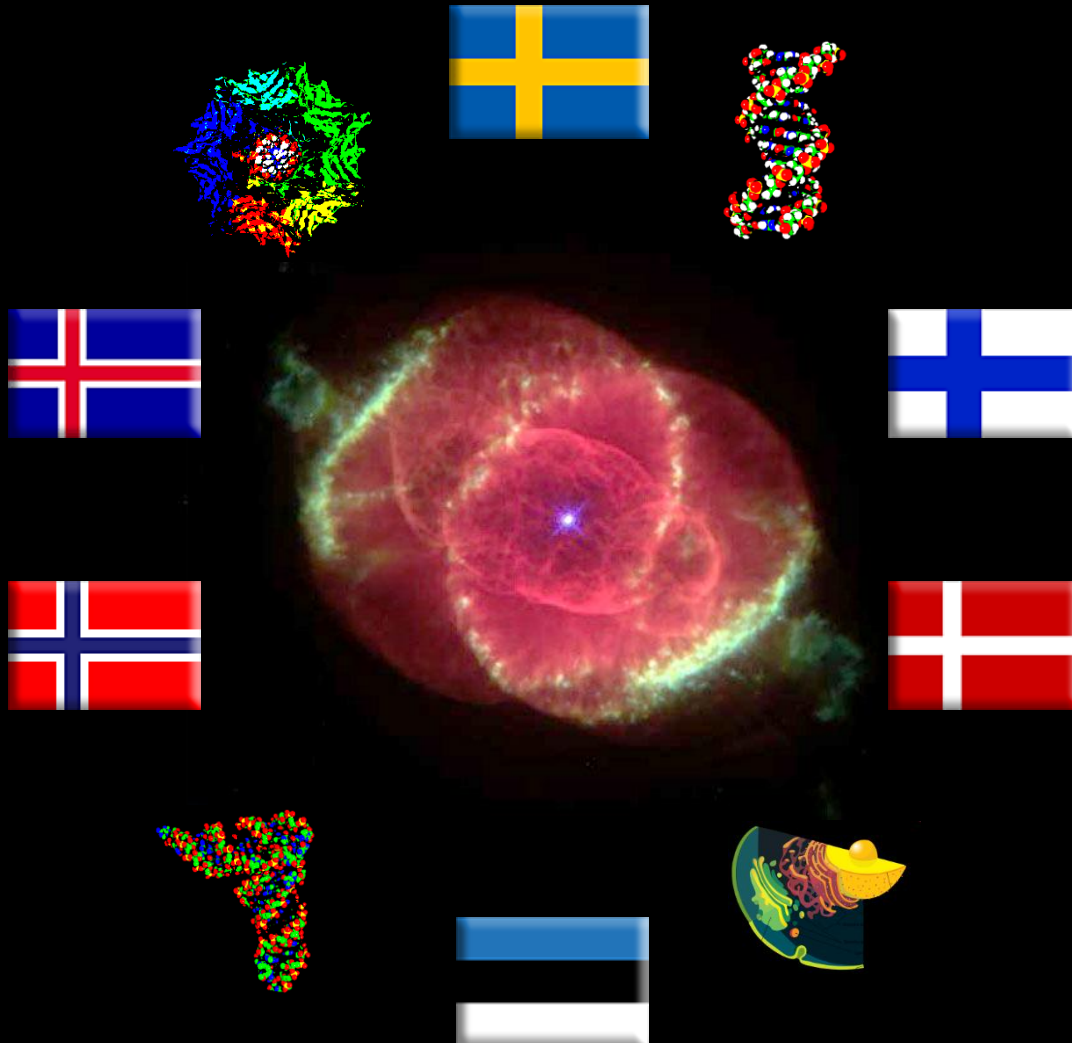


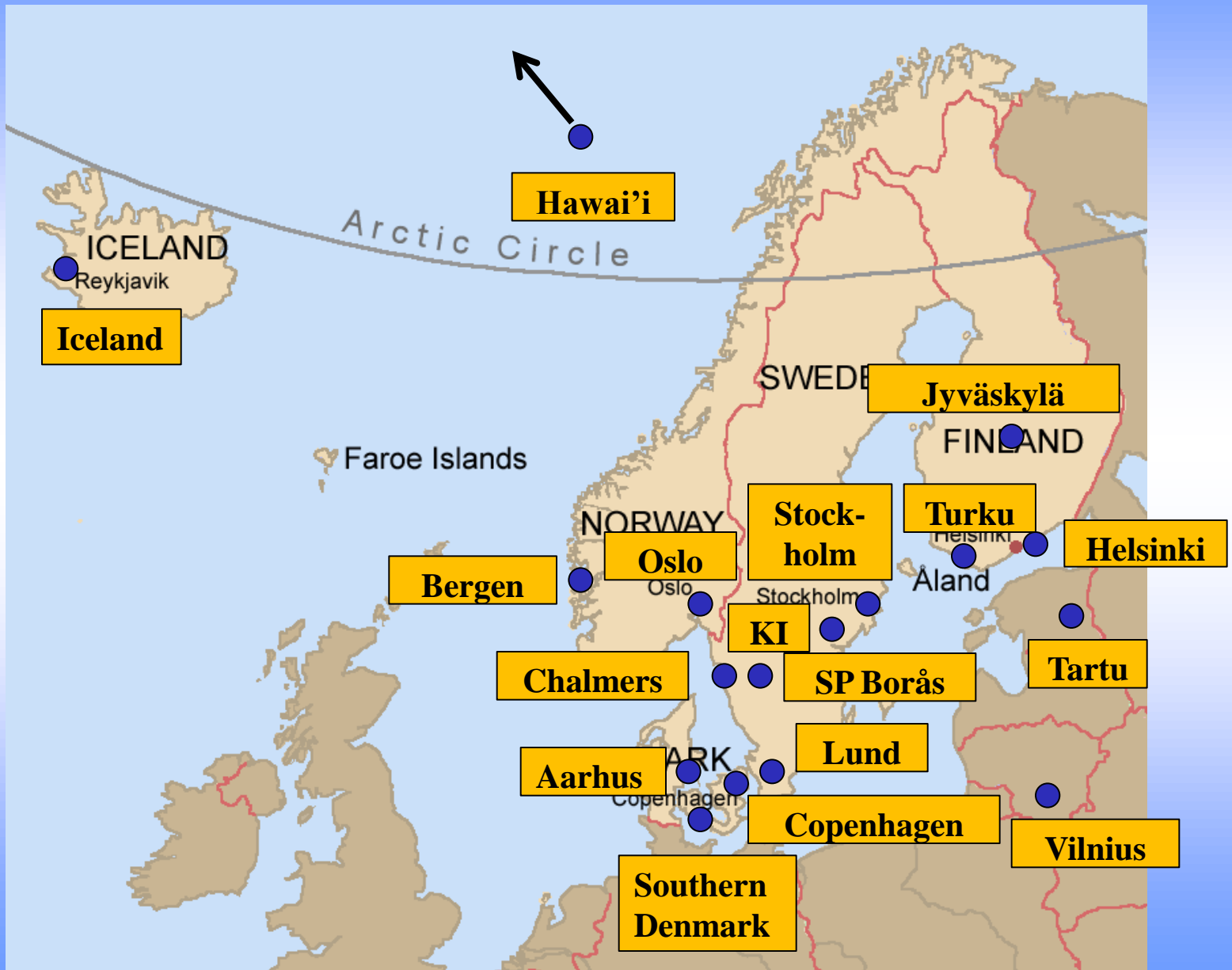
Nordic Network of Astrobiology



Nordic Astrobiology Network

- ★ Launched March 2011
- ★ Network of institutions, not individual members
- ★ Local team led by Team Coordinator
- ★ 16 Teams in Nordic Countries, 1 in the US
- ★ Multidisciplinary research projects
- ★ Since April 2011 Affiliated Partner of NASA Astrobiology Institute
- ★ Yearly meeting (2013: "Isotope ratios as diagnostic tools astrobiology, Höör, Sweden)

Partaking Institutions

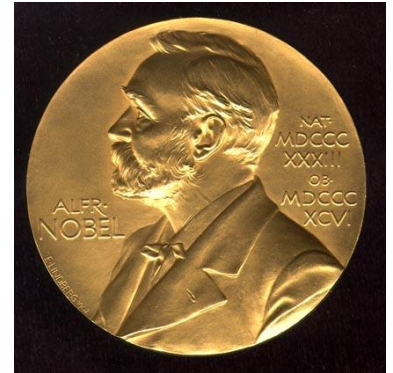


New Members

Karolinska Institutet (Sweden)

Coordinator: Prof. Roman Zubarev

Theme: Isotopes and the
Origin of Life



Vilnius University (Lithuania)

Coordinator: Prof. Gražina
Tautvaišienė

Themes: Stellar evolution
Composition
of evolved stars



**Moletai
Observatory**



Activities since last EC meeting

- ★ Summer school "Water, Ice and the Origin of Life in the Universe"
Iceland, 2-15 July 2012
- ★ Yearly Network Meeting: "The Warm Universe: Astrochemistry at Intermediate and Elevated Temperatures"
- ★ Follow-up on the Swedish Government's Research Proposition (plan for Swedish Research 2012 - 2016)
 - "The origin of life and its prerequisites" suggested by 4 major research funding agencies as a key theme for Swedish Research in 2012-2016
 - Government will decide on Research Proposition in autumn.

Meeting

"The Warm Universe: Chemistry at Intermediate and Elevated Temperatures"



Tallinn (Estonia), May 29 to 2 June 2011

- ★ Co-organised by the Nordic Astrobiology Network and the European Union Co-operation in Science and Technology (COST) Action: "The Chemical Cosmos"
- ★ 4.5 days, 9 sessions with themes ranging from the diffuse interstellar medium over planetary and exoplanetary atmospheres to supernova remnants
- ★ Around 90 participants



Guided tour and Estonian dinner
at Eesti Vabaõhumuuseum



Evening walk and medieval
dinner at Oude Hansa

Nordic-Hawai'i Summer School

"Water, Ice and the Origin of Life in the Universe"

Iceland, 2 - 15 July 2012

- ★ Organised by Stockholm University and the University of Hawai'i
- ★ 44 students selected out of 180
- ★ 3 parts
 - Lectures (astronomy, physics, geology, biology)
 - Excursions (sampling)
 - Investigation of microbial activity on lava fields, glaciers and rhyolite mountains (ATP assay)
- ★ Poster sessions for participants
- ★ Public Event at Reykjavik)



Sampling at Landmannalaugar



Field lab at Skógar



**Sampling at
Sólheimajökull**



Astrobiologists at Lava fields



..... at dinner



... and at hot springs

Furthermore we offered...



**Excursions on the
knife edge**



5-star catering



Top facilities

Results

“Vatn,ís og upprunni lífs í alheimi”

- ★ Very good feedback
- ★ Interesting scientific results from field tips (follow-up excursion
Or course “Glaciation, volcanism and life) possible
- ★ Appearance on Icelandic TV
- ★ Article in most influential Icelandic paper (Morgunblaðið)
- ★ Students stay in contact (Saganet)
- ★ Courses building up on summer school wishes

Flower Power



in Hawai'i



.. and in Iceland

Open Nordic Network Meeting

"Isotopes as diagnostic tools in astronomy, geology and biology (Höör, SE 5-10 June 2013)

★ Session themes

- Isotopes in stars and stellar environments
- Isotopic ratios in complex interstellar molecules
- Isotopes and the early history of the solar system
- Isotopes in dating geological formations
- Isotope ratios as indications of catastrophic events
- Isotopes and metabolism
- Isotope ratios as biomarkers on habitable planets
- Isotopes and identification of early life
- Isotopes in ice cores and past and present climate



Stevns Klint

★ Excursion to C-T boundary Displaying formations at Stevns Klint, Denmark

★ Just before Meeting on Education In astrobiology planned



Åkersberga herrgård

Course: Impacts and their Role in Evolution of Life Saaremaa (16-26 August 2013)

- ★ Strong subject in the Nordic Countries
- ★ Nordic Impact Research Network joined us



Kaali crater (Estonia)



Pytheas



Lennart Meri

Impacts and their role in evolution of Life

- ★ Lectured part and practical exercises
 - Peat core sampling, preparation and simple analysis of pollen indicators of the Kaali event
- ★
 - Georadar profiling of impact craters
- ★
 - Petrographic microscopy of impactites
- Electrometric mapping of impact-structures

Excursion to Silurian fossile areas (Panga cliffs)



Panga cliffs



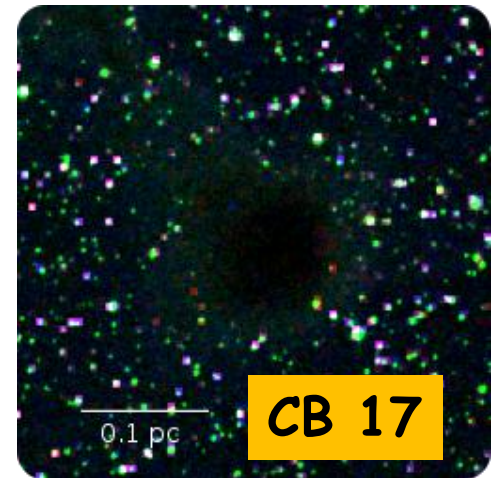
Silurian fossils

Molecules in Space, Onsala 24 June - 2 July 2013

- ★ Lectured part from Big Bang to Supernova remnants
- ★ Model calculations of dark clouds, circumstellar envelopes and planetary atmospheres
- ★ Determination of mass of Bok globule through $^{12}\text{CO}/^{13}\text{CO}$ ratio mapping with 20m radiotelescope
- ★ Might lead to publishable results



Onsala Space Observatory

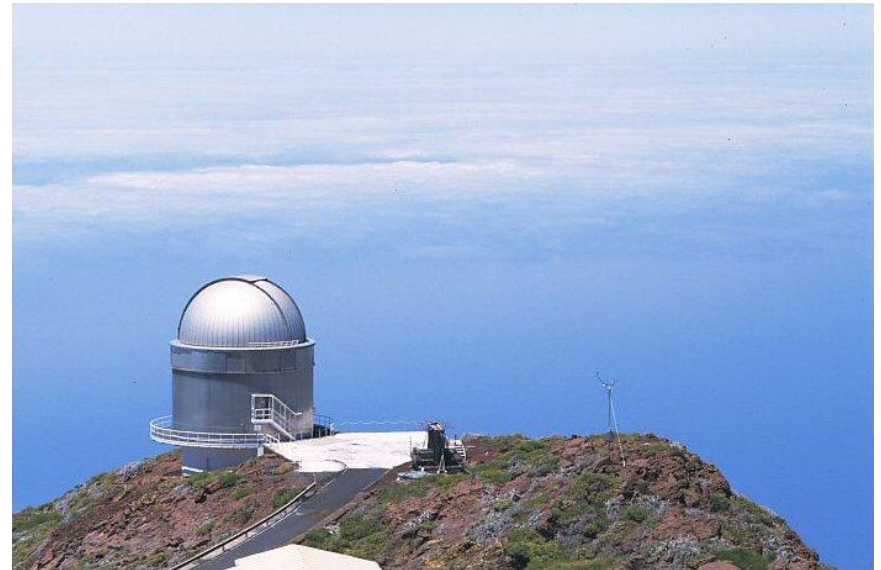


Other planned courses

- ★ Exoplanets (Nordic Optical Telescope, La Palma, Canary Islands March 2014)
- ★ Glaciation, Vulcanism and Life (Iceland 2014, in cooperation with NordVulk)
- ★ Life in extreme environments (Atacama desert, Chile Autumn 2014)
- ★ The Life Cycle of stars (Molėtai, Lithuania, August 2014)
- ★ Early forms of Life (Shark's Bay, Australia 2015)



Atacama desert



Nordic Optical Telescope, La Palma

Most important training event

**Hawaii-Nordic Winter School
January 2014**

Further infos

<http://www.nordicastrobiology.net>



Takk fyrir !



Kiitos paljon !



Tack så mycket !



Mange tak !



Tänan paljon !



Mahalo Nui Loa !



Labai ačiū



Tusen takk !